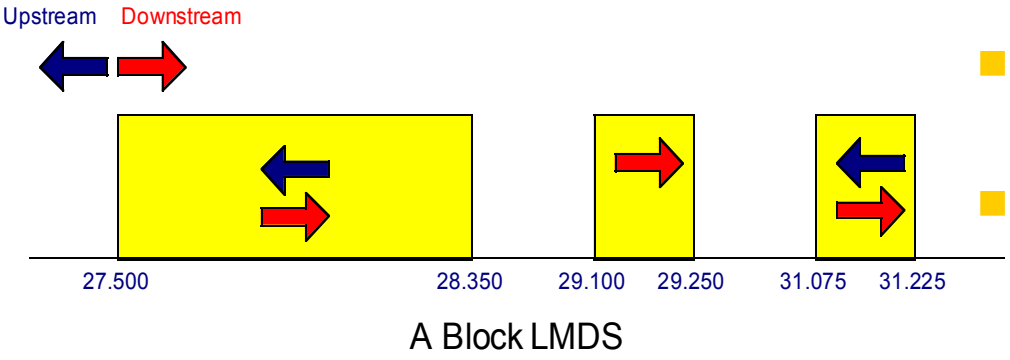
RF Etiquette Requirements for an LMDS Air Interface Standard

Jay Klein - CTO

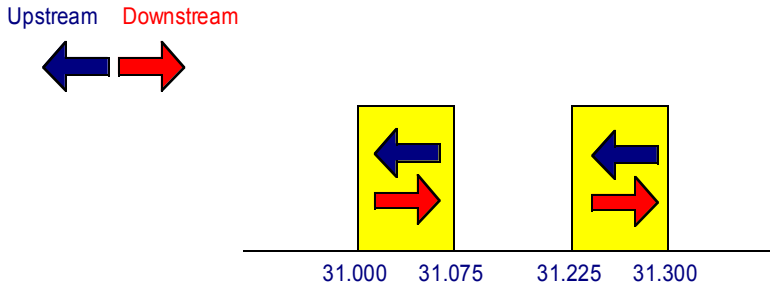
Framework

… establishing a ***voluntary standard*** for broadband wireless access equipment and ***spectrum etiquette*** in frequency bands from ***10 GHz and higher*** with emphasis on the delivery of ***commercial services***...

The LMDS case



A Block LMDS



B Block LMDS

- Almost no FCC restrictions on hub/sub sub/hub usage
- FDD on the 850 MHz A-block is likely to require a 100 to 150 MHz guard band
- location of guard band depends on asymmetry requirements
- TDD may be used almost in all blocks especially in the B-block which favors it

Channelization Philosophy

- **Flexibility**
- **Consistent plan**:
  - Suitable for various air-interfaces
  - Suitable for different bandwidth requirements (PtP, PMP, QPSK like to QAM64 like)
- **Coordination**:
  - “Controlled” interference reduces the complexity
  - The service provider is responsible for coordination and system coexistence

Channel Plan

- **US**
  - N*5 MHz channels (i.e., 5, 10, 15, 20, 25…)
  - Comply to equivalent US emission mask “algorithm” (i.e., 47 CFR Part 101.111, (a), (2) Pg. 761)
- **ETSI**
  - 3.5, 7, 14, 28, 56 & 112 MHz channels
  - ETS 300-431, 4.1.2 (24.25?29.50 MHz)
  - Emission mask according to ETS 300-431, 5.3.2

Power Control

- Adjust (increase/decrease) transmitter power output according to link conditions to maintain a required performance (BER)
- Necessary for maximizing capacity (frequency re-use) and minimizing interference
- **PtP**: Power control on both ends of the link
- **PMP**: Hub must consider the worst case user (most distant) and generaly adjust its power output

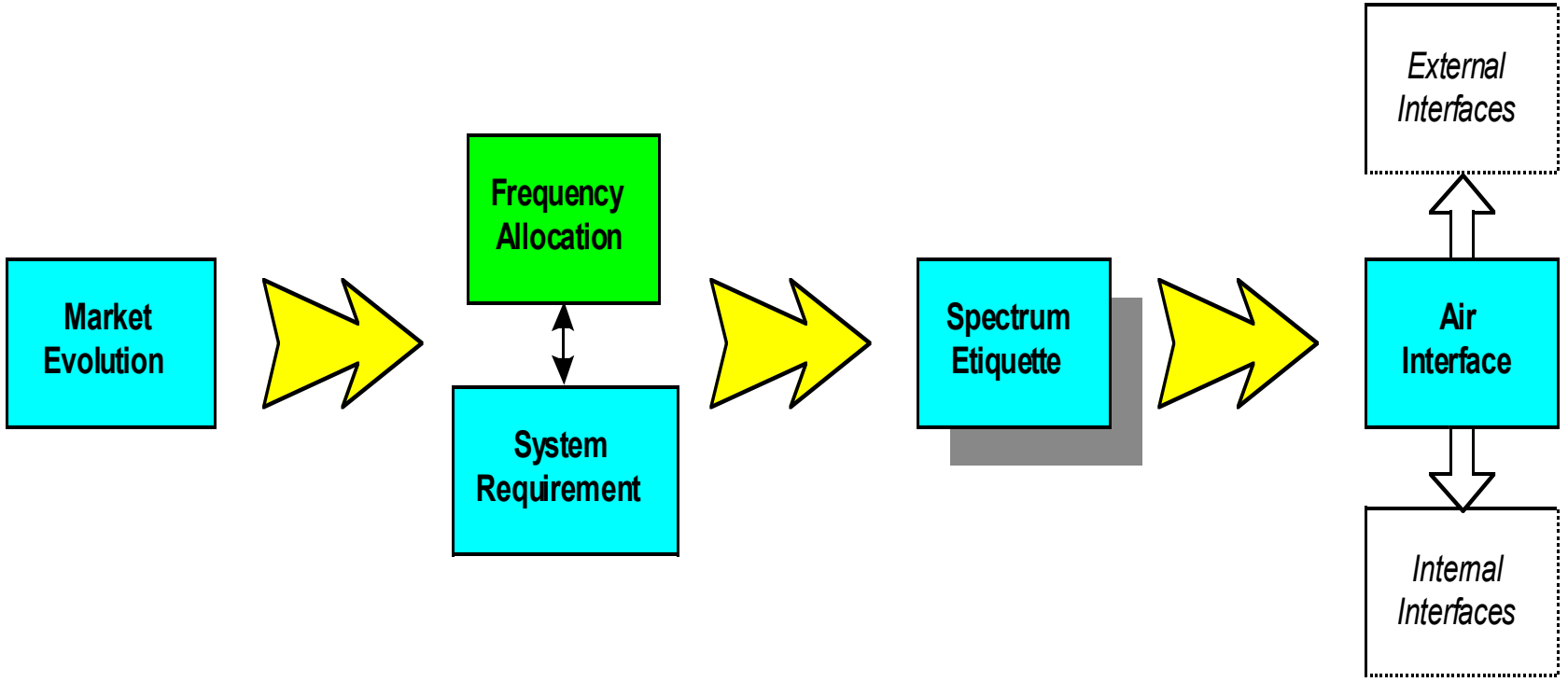
Antenna

- **Patterns**
  - Current FCC regulations are silent on this issue
  - Recommendation not to specify (at this level)
- **Polarization**
  - Linear, H/V

IDU/ODU Interface

- Majority consensus: Too early to specify
- Issue differed to a WG to review different approaches for future group discussions

Philosophy


Market Evolution
Frequency Allocation
System Requirement
Spectrum Etiquette
Air Interface
External Interfaces
Internal Interfaces

Spectrum Use Coordination

- **Some issues discussed:**
  - Sharing common hub sites
  - Carrier frequency/Polarization coordination
  - Arbitration
  - Power control